

SUPPLEMENTARY MATERIAL

TABLES

Table A. List of Data Sources and Availability for Primary and Secondary Outcomes by Country

Country	HIV Rates and Diagnoses	Condomless Anal Sex in the Past 12 Months	HIV Testing in the Past 12 Months	STI Rates and/or Male:Female Ratios
Australia	Routine case reporting from state and territory health departments to the National HIV Registry. The 2001 estimate for the male population ages 15-65 was used for year 2000.	Gay Community Periodic Surveys in Sydney, Melbourne, Brisbane, Adelaide, Perth and Canberra. Data reported by the Centre for Social Research in Health, UNSW Australia. CAS is reported for the previous 6 months prior to survey.	Same data source as CAS. HIV testing among non-HIV-positive men in the past 12 months prior to survey.	Syphilis rates, syphilis male:female case ratios and gonorrhea rates are from the National Notifiable Diseases Surveillance System. Gonorrhea and syphilis rates were among all men, not just MSM, and were not restricted by age. Syphilis diagnoses included primary, secondary, and early latent syphilis.
Belgium	Confirmations of HIV diagnoses from 7 AIDS Reference Laboratories (no underreporting, no reporting delays). 2013 census population data were used for 2014. Data were obtained by the Scientific Institute of Public Health.			
Canada	New HIV diagnoses reported to the National HIV/AIDS Surveillance System. Data not adjusted to account for reporting delays (2013, 2014) and do not include Quebec as Quebec does not report exposure category. Population data source: Annual Demographic Statistics, Demography Division, Statistics. MSM cases and male population denominators are among those ages 15-64.	M-Track (enhanced surveillance of men who have sex with men) surveillance system, phases 1 and 2. Phase 1 took place from 2005-2007 at 5 sentinel sites (Montreal, Ottawa, Toronto, Winnipeg, and Victoria) and data are presented using 2006 as the median year. Phase 2 took place from 2008-2009 at two sentinel sites (Montreal and Vancouver) and data are presented using 2008 as the median year. CAS is reported for the previous 6 months prior to survey.	Same data source as CAS. HIV testing among MSM who were HIV-negative or had an unknown HIV status.	Canadian Notifiable Disease Surveillance System. Syphilis diagnoses include primary, secondary, and early latent stage diagnoses due to reporting mechanism. Rate data only include provinces and territories that provide diagnoses by age among men aged 15-65, and male population denominators include only these corresponding provinces/territories.

Denmark	National HIV surveillance by Statens Serum Institut. The MSM who were reported for the first time in Denmark, but who had previously been diagnosed in another country (i.e. not truly “new diagnoses”) were omitted.	Sex Life Surveys in 2000, 2001, 2002, 2006, 2009 and 2010 (Year 2010 as part of European Men’s Internet Survey project).	Sex Life Surveys in 2001, 2002, 2006, 2009 and 2010 (Year 2010 as part of European Men’s Internet Survey project).	Syphilis & Gonorrhea Rates: New cases among MSM ages 15-65. Syphilis cases were included if they also had HIV status reported. Denominators are MSM population estimates using the national estimate of 3.3% MSM.
France	Mandatory HIV notifications adjusted for underreporting, reporting delays, and missing values obtained from the French Public Health Agency.	Enquête Presse Gay (Gay Press Survey) from 2000, 2004, and 2011.	Prevagay cross-sectional, venue-based survey from 2009. Enquête Presse Gay (Gay Press Survey) from 2011.	
Germany	Estimated number of HIV diagnoses were informed by mandatory HIV notification system. The number of HIV diagnoses is estimated because of additional verification of first (vs. duplicate) HIV diagnoses is confirmed by Robert Koch Institute. MSM diagnoses are also estimated based on an adjustment for missing transmission category.	Schwule Männer und AIDS (SMA-Gay men and AIDS) Surveys. There have been changes in the sample size, sampling frames (offline – online), and sample composition over time, which make interpretation of trends difficult.	Same data source and concerns as CAS.	Case data reported by Robert Koch Institut.
Netherlands	Stichting HIV Monitoring (SHM)/ATHENA national observational HIV cohort. Data from 2000-2012 were adjusted for underreporting; 2013-14 data were unadjusted and may underestimate diagnoses.			
Portugal	HIV cases from national HIV case report system database. Clinical case reporting of new HIV diagnoses has been mandatory since 2005. Data are not adjusted for reporting delay. Population data was obtained from Statistics Portugal.			Male:female case ratios were obtained from data published in the National Communicable Diseases Surveillance System annual reports.
Spain (Catalonia)	All data for Spain are specific to the region Catalonia only. HIV cases were reported to the HIV and AIDS Mandatory Surveillance System of Catalonia from 2001-2014. Data are not adjusted for reporting delay. Statistical approach is applied to adjust for reporting delays for 2014 (global and by transmission mode).	Bio-behavioral surveillance surveys among MSM recruited in gay venues (SIALON 1 and 2). Behaviors are for the last 6 months. Proportion of those reporting CAS with a steady partner are among those reporting AI with a steady partner. The same approach was used for CAS with a non-steady partner.	Same data source as CAS. Testing outcome excludes those who had been previously diagnosed with HIV for more than 12 months prior to survey.	Primary and secondary syphilis and gonorrhea cases notified to the STI Mandatory Surveillance System of Catalonia from 2007-2014. In 2014, the STI Mandatory Surveillance System of Catalonia incorporated the notifications from the Microbiological Notification System.

Sweden	Mandatory case reporting from clinicians and laboratories to the National Universal Surveillance System for HIV. Data obtained from a) SweHIVReg, Public Health Agency of Sweden for 2000-2009, and b) SmiNet, Public Health Agency of Sweden for 2010-2014. New HIV diagnoses include all those reported as male-to-male sexual transmission. Data are adjusted for reporting delays for years less than 24 months from date of reporting. MSM already diagnosed in another country are excluded. Denominator population data for men 15-65 years were obtained from Statistics Sweden.	National MSM Internet Survey, a self-selected online sample from the gay community QX Qruiser (2006, 2008, 2013). European MSM Internet Survey, a self-selected online sample from the gay communities QX Qruiser and PlanetRomeo (2010).	Same data source as for CAS.	Data source was SmiNet, Public Health Agency of Sweden. Early latent phase syphilis cases were not included when data on stage were available.
Switzerland	HIV diagnoses data: Swiss Notification System and Swiss Federal Office of Public Health. Population denominator data: Swiss Federal Office for Statistics. Data were adjusted for reporting delays and missing transmission category.	Gaysurvey in 2000, 2004, 2006, 2008, 2012, 2014 and EMIS 2010. Proportion of those reporting CAS with a steady partner are among those reporting AI with a steady partner. The same approach was used for CAS with a non-steady partner.	Same data source as CAS.	Swiss Notification System and Swiss Federal Office of Public Health. Data were adjusted for reporting delays. Syphilis was not a notifiable infection until 2006. Gonorrhoea was notifiable, but reporting the sex of sexual partners started in 2006. Therefore, STI trends begin with 2007.
United Kingdom	HIV & AIDS Reporting System (HARS) database. Reporting delays are very low (<2%) and therefore data are not adjusted for reporting delays.	London Gay Men's Sexual Health Survey. CAS and HIV testing data are specific to MSM in London, England and not the entire UK. Behavioral data summarized in: Aghaizu, A, Wayal, S, Nardone, A et al. Sexual behaviours, HIV testing, and the proportion of men at risk of transmitting and acquiring HIV in London, UK, 2000–13: a serial cross-sectional study. Lancet HIV. 2016.	Same data source as CAS.	STI diagnoses are made in Genitourinary Medicine (GUM) clinics and integrated sexual health services that report data through the Genitourinary Medicine Clinic Activity Dataset (GUMCAD). National population census data are from the Office for National Statistics. STI data are specific to England only.
United States	National HIV Surveillance System at the US Centers for Disease Control and Prevention (CDC). Confidential name-based reporting of HIV diagnoses was adopted by all states starting in 2008. MSM cases include men who have male-to-male sexual contact risk, and men who have both male-to-male sexual contact risk and injection drug use. Data are reported through June 2016. Numbers are adjusted for missing risk-factor information but are not adjusted for reporting delays.	The US CDC's National HIV Behavioral Surveillance system among 21 US cities. Data are collected every 3 years among MSM (2005, 2008, 2011, 2014).	Same data source as CAS.	Nationally notifiable disease reporting from state and local STD programs to the Division of STD Prevention at the US CDC.

Table B. Country-specific Trends in Condomless Anal Sex in the Past 12 Months^{1,2} among Men Who Have Sex With Men, Overall and by Partner Type, 2000-2014³

Country	EAPC	95% Confidence Interval		P-value
		Lower	Upper	
Condomless anal sex in the past 12 months with any partner				
Canada	4.87	2.34	7.47	<0.01
England	1.39	0.86	1.92	<0.01
Sweden	-1.37	-3.95	1.28	0.31
United States	4.27	2.69	5.89	<0.01
Condomless anal sex in the past 12 months with a steady/main partner				
Australia	0.98	0.14	1.82	0.02
Canada	7.43	5.26	9.64	<0.01
Denmark	1.54	0.88	2.21	<0.01
France	1.74	0.27	3.23	0.02
Germany	3.06	1.47	4.68	<0.01
Spain	2.17	1.32	3.04	<0.01
Switzerland	2.31	1.71	2.92	<0.01
United States	2.62	2.49	2.76	<0.01
Condomless anal sex in the past 12 months with a non-steady/casual partner				
Australia	2.40	1.11	3.70	<0.01
Canada	-6.00	-8.54	-3.40	<0.01
France	4.64	1.93	7.41	<0.01
Germany	7.45	4.89	10.08	<0.01
Spain	5.39	3.95	6.85	<0.01
Sweden	3.45	0.25	6.76	0.03
Switzerland	5.60	2.16	9.17	<0.01
United States	6.96	5.65	8.29	<0.01

Abbreviations: EAPC, estimated annual percent change

¹The outcome was the proportion of men reporting condomless anal sex in the past 12 months (any, with a steady/main partner, with a non-steady/casual partner).

²Australia, Canada, and Spain reported condomless anal sex in the past 6 months (not past 12 months).

³Each country differed in the years of data available for analysis, ranging between 2000 and 2014.

Refer to the Supplementary Material–Table A and Figure A for detailed information on data availability and sources for this outcome.

Table C. Country-specific Trends in HIV Testing in the Past 12 Months¹ among Men Who Have Sex with Men, 2000-2014²

Country	Joinpoint Period	EAPC	95% Confidence Interval		P-value
			Lower	Upper	
Australia	1	-0.86	-1.58	-0.14	0.02
Canada	1	9.67	6.66	12.75	<0.01
Denmark	1	2.95	1.99	3.91	<0.01
France	1	-15.48	-17.50	-13.42	<0.01
England	1	9.66	9.57	9.76	<0.01
	2	1.77	1.40	2.14	<0.01
Germany	1	0.95	-0.35	2.28	0.15
Spain	1	0.58	-0.31	1.47	0.20
Sweden	1	0.75	-0.93	2.46	0.39
Switzerland	1	1.33	0.42	2.24	<0.01
United States	1	-0.70	-3.01	1.67	0.56

Abbreviations: EAPC, estimated annual percent change

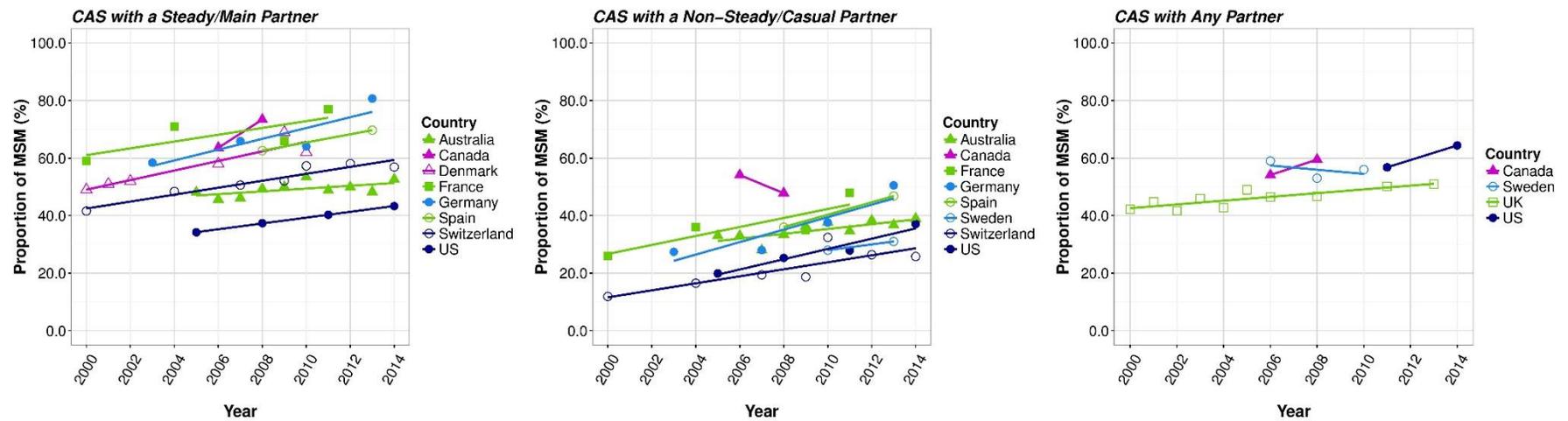
¹The outcome was the proportion of men reporting having received an HIV test in the past 12 months.

²Each country differed in the years of data available for analysis, ranging between 2000 and 2014.

Refer to the Supplementary Material–Table A and Figure B for detailed information on data availability and sources for this outcome.

FIGURES

Figure A. Country-specific Trends in Condomless Anal Sex in the Past 12 Months among Men Who Have Sex with Men, 2000–2014



Abbreviations: CAS=condomless anal sex, MSM=men who have sex with men
 Notes: For Australia, Canada, and Spain, the proportion of MSM reporting CAS is for the past 6 months.

Figure B. Country-specific Trends in HIV Testing in the Past 12 Months among Men Who Have Sex with Men, 2000–2014

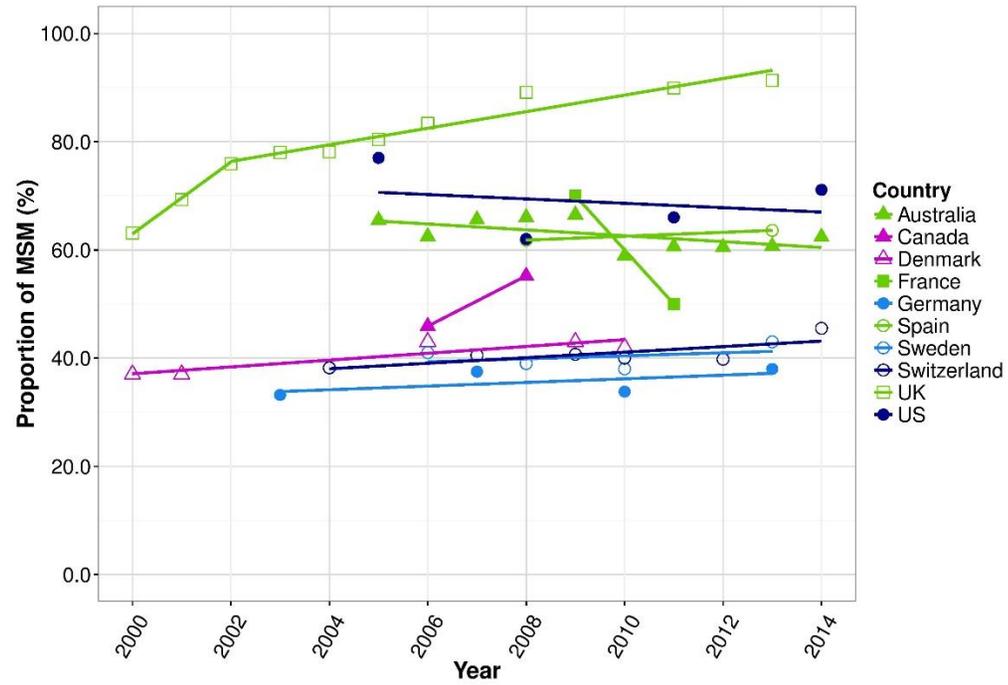
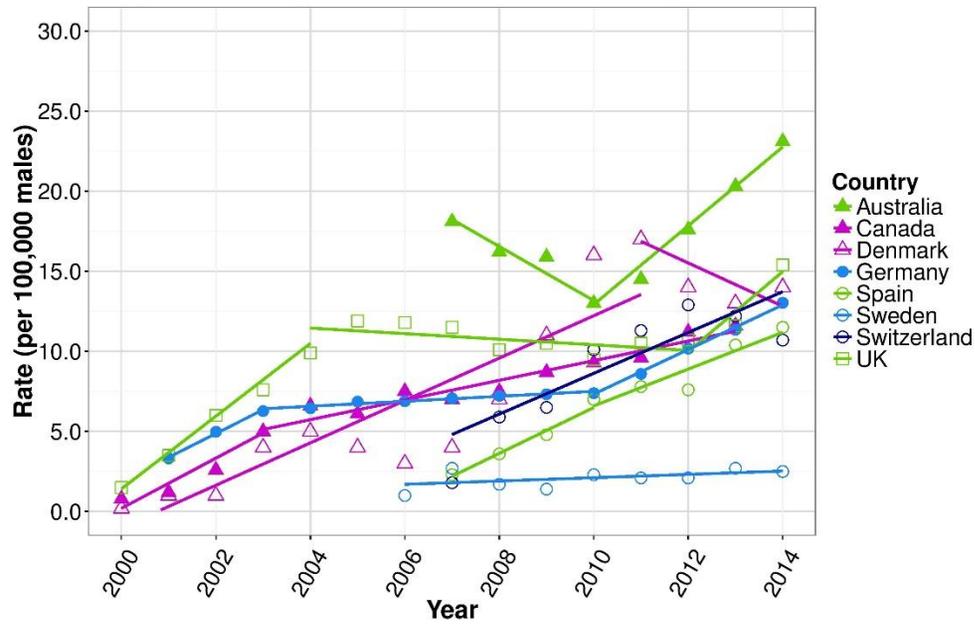


Figure C. Country-specific Trends in Primary and Secondary Syphilis Diagnoses among Men Who Have Sex With Men, 2000–2014



Note: For Australia and Canada, syphilis diagnoses are for men, not specifically men who have sex with men.

Figure D. Country-specific Trends in Male:Female Case Ratio of Primary and Secondary Syphilis Diagnoses, 2000–2014

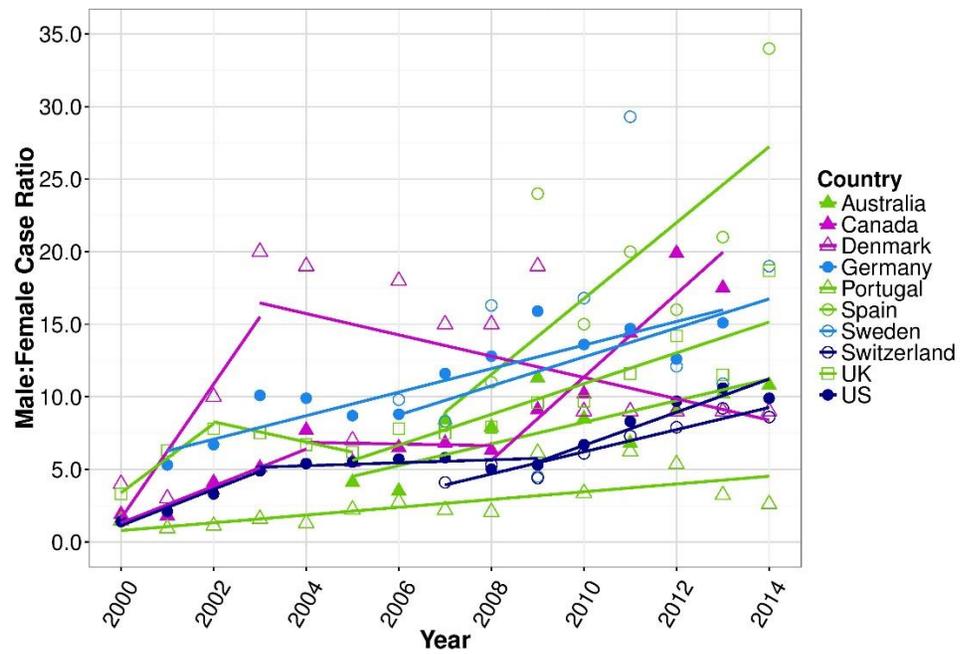
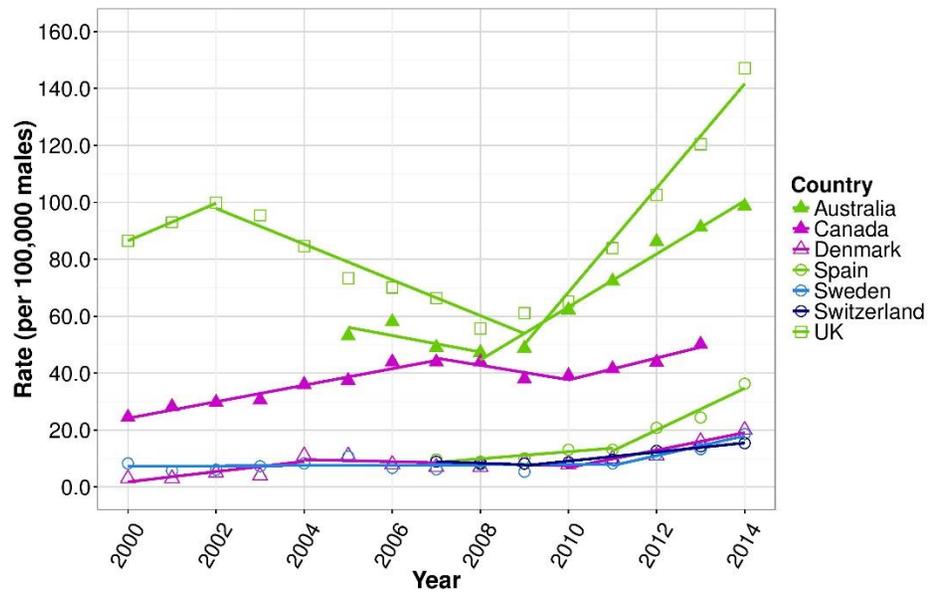


Figure E. Country-specific Trends in Gonorrhea Diagnoses among Men Who Have Sex With Men, 2000–2014



Note: For Australia and Canada, gonorrhea diagnoses are for men, not specifically men who have sex with men.

Figure F. Country-specific Trends in Male:Female Case Ratio of Gonorrhea Diagnoses, 2000–2014

